

STN	Paralelne pripojené aktívne korekčné zariadenia (ACD)	STN EN IEC 63497 35 1531
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Shunt-connected active correction devices (ACD)

Táto norma obsahuje anglickú verziu európskej normy.

This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 07/26

Obsahuje: EN IEC 63497:2026, IEC 63497:2026

142841



EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN IEC 63497

April 2026

ICS 29.200; 29.240.01

English Version

**Shunt-connected active correction devices (ACD)
(IEC 63497:2026)**

Dispositifs de correction active (ACD) à connexion shunt
(IEC 63497:2026)

Parallele aktive Korrekturgeräte (ACD)
(IEC 63497:2026)

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EN IEC 63497:2026 (E)**European foreword**

The text of document 22E/301/FDIS, future edition 1 of IEC 63497, prepared by SC 22E "Stabilized power supplies" of IEC/TC 22 "Power electronic systems and equipment" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 63497:2026.

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IEC 61000-2-4:2024	NOTE	Approved as EN IEC 61000-2-4:2024 (not modified)
IEC 61000-4-7	NOTE	Approved as EN 61000-4-7
IEC 61000-4-13:2002	NOTE	Approved as EN 61000-4-13:2002 (not modified)
IEC 61000-4-30:2025	NOTE	Approved as EN IEC 61000-4-30:2025 (not modified)
IEC 61557-12	NOTE	Approved as EN IEC 61557-12
IEC 61800-3	NOTE	Approved as EN IEC 61800-3
IEC 62586-1	NOTE	Approved as EN 62586-1

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

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NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60364-1	-	Low-voltage electrical installations - Part 1: Fundamental principles, assessment of general characteristics, and definitions	-	-
IEC 60529	-	Degrees of protection provided by enclosures (IP Code)	-	-
IEC 60664-1	2020	Insulation coordination for equipment within low-voltage supply systems - Part 1: Principles, requirements and tests	EN IEC 60664-1	2020
IEC 61000-6-2	2016	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity standard for industrial environments	EN IEC 61000-6-2	2019
IEC 61000-6-4	2018	Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments	EN IEC 61000-6-4	2019
IEC 62477-1	2022	Safety requirements for power electronic converter systems and equipment - Part 1: General	EN IEC 62477-1	2023



IEC 63497

Edition 1.0 2026-03

INTERNATIONAL STANDARD

Shunt-connected active correction devices (ACD)

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CONTENTS

FOREWORD	4
INTRODUCTION	6
1 Scope	8
2 Normative references	8
3 Terms, definitions and abbreviated terms	9
3.1 Terms related to devices	9
3.2 Terms related to device electrical parameters	9
3.3 Terms related to electrical phenomena	10
3.4 Miscellaneous	14
3.5 Abbreviated terms	14
4 Ratings	14
4.1 Rated frequency	14
4.2 Rated voltage	14
4.3 Connection wiring types	14
5 Requirements for design and construction	15
5.1 General requirements	15
5.1.1 Architecture	15
5.1.2 Functional classification	16
5.2 Safety requirements	17
5.2.1 General	17
5.2.2 Protection against electric shocks	17
5.2.3 Protection against mechanical hazards	17
5.2.4 Protection against fire	17
5.2.5 Temperature	17
5.2.6 Protection against hazards from fluids	17
5.2.7 Protection against radiation, including laser sources, and against sonic and ultrasonic pressure	17
5.2.8 Components and subassemblies	17
5.2.9 Reasonably foreseeable misuses (hazards resulting from application)	17
5.2.10 Protection against other hazards	18
5.3 EMC requirements	18
5.3.1 Immunity requirements	18
5.3.2 Emission requirements	18
5.4 Climatic requirements	18
5.4.1 Temperature and humidity	18
5.4.2 Altitude	18
5.5 Mechanical requirements	19
5.5.1 Vibrations	19
5.5.2 Shocks	19
5.5.3 Enclosure robustness (IK code)	19
5.5.4 Degree of protection by enclosures (IP code)	19
5.6 Earthing scheme	19
5.7 Markings and technical documentation	19
5.7.1 General	19
5.7.2 Product specific markings	19
5.7.3 Product specific items in technical documentation	20

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6	Type tests	21
6.1	Reference conditions for testing.....	21
6.2	Safety tests.....	22
6.3	EMC tests.....	22
6.3.1	EMC immunity and emission.....	22
6.3.2	Voltage harmonic immunity.....	22
6.4	Climatic tests	23
6.5	Mechanical tests	23
6.5.1	Vibrations	23
6.5.2	Shocks	23
6.6	Functional tests	24
6.6.1	Reference conditions for testing	24
6.6.2	Harmonic global compensation	24
6.6.3	Harmonic attenuation capability	25
6.6.4	Reactive power compensation output current.....	25
6.6.5	Reactive power compensation accuracy	25
6.6.6	Source current balancing.....	26
6.6.7	Minimum fault level test	28
6.6.8	Harmonic response time	29
6.6.9	Reactive power compensation response time	30
6.6.10	Losses.....	30
6.7	Performance criteria	31
7	Routine tests	31
7.1	Safety tests.....	31
7.2	Functional tests	32
7.3	Limited thermal tests.....	32
7.3.1	Target.....	32
7.3.2	Procedure.....	32
7.3.3	Acceptance criteria	32
Annex A (normative)	Response time test specification	33
A.1	Assumption.....	33
A.2	Specification	33
Annex B (normative)	Non-linear reference load for harmonic test.....	35
B.1	General.....	35
B.2	Mathematical representation	35
B.3	General principle	35
B.4	Load specification for 3W system.....	36
B.5	Load specification for 4W system.....	38
Annex C (informative)	Self-resonance tests	41
C.1	General.....	41
C.2	Proposed method.....	41
C.2.1	Test setup	41
C.2.2	Test method	41
C.3	Evaluation.....	42
Bibliography		43

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Figure 1 – Typical current waveforms for single-phase non-linear loads.....	6
Figure 2 – Typical current waveforms for three-phase non-linear loads	7
Figure 3 – Internal architecture of an ACD	15
Figure 4 – Principle of operation of an ACD (for AHF function).....	16
Figure 5 – Negative sequence current creation	27
Figure 6 – Zero sequence current creation.....	28
Figure 7 – Response time illustration	29
Figure A.1 – Current waveforms.....	34
Figure A.2 – Calculated RMS current of ACD versus time	34
Figure B.1 – Load waveform for 3W system	36
Figure B.2 – ACD waveform for 3W system.....	37
Figure B.3 – Load waveform for 4W system	39
Figure B.4 – ACD waveform for 4W system.....	40
Table 1 –Temperature classes	18
Table 2 – Items to document in technical documentation	20
Table 3 – Additional reference conditions for testing	21
Table 4 – Individual voltage harmonic limits for odd non-multiple 3 harmonics	23
Table 5 – Negative sequence component specification	27
Table 6 – Zero-sequence component specification.....	27
Table 7 – Test specification	28
Table 8 – Definition of response time parameters	29
Table 9 – Performance criteria for ACD.....	31
Table B.1 – Phase sequence for load harmonics.....	35
Table B.2 – Load spectrum for 3W system	36
Table B.3 – ACD spectrum for 3W system	37
Table B.4 – Load spectrum for 4W system	38
Table B.5 – ACD spectrum for 4W systems.....	39

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Shunt-connected active correction devices (ACD)

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IEC 63497 has been prepared by subcommittee 22E: Stabilized power supplies of IEC technical committee 22: Power electronic systems and equipment. It is an International Standard.

The text of this International Standard is based on the following documents:

Draft	Report on voting
22E/301/FDIS	22E/306/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

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This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

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- revised.

INTRODUCTION

Loads with non-linear behaviour, causing power quality issues, are increasingly frequent in all industrial, commercial and residential installations, and their percentage in overall electrical consumption is growing steadily.

This type of loads can be found in

- industrial equipment (welding machines, arc and induction furnaces, battery chargers, rectifiers like electrolyzers, etc.),
- variable speed drives (VSD) for AC or DC motors,
- uninterruptible power supplies, and
- electric vehicle charging system.

In power systems, when non-linear loads are connected, they generate harmonics, whose effects are described in IEC TS 63191. The major consequences of harmonics are the increase of the RMS current in the different circuits and the deterioration of the supply voltage quality. The negative impact can remain un-noticed, but economical results can be compromised:

- increased overloading on the electrical system, thereby limiting usable capacity;
- increased energy losses;
- increased risks of outage;
- overheating of equipment and cables in installation leading to reduction of equipment lifetime;
- perturbation of some electronic systems.

Figure 1 and Figure 2 present typical current waveforms for single-phase and three-phase non-linear loads respectively, measured by devices such as power metering and monitoring devices (PMD) compliant to IEC 61557-12 or power quality instruments (PQI) compliant to IEC 62586-1.

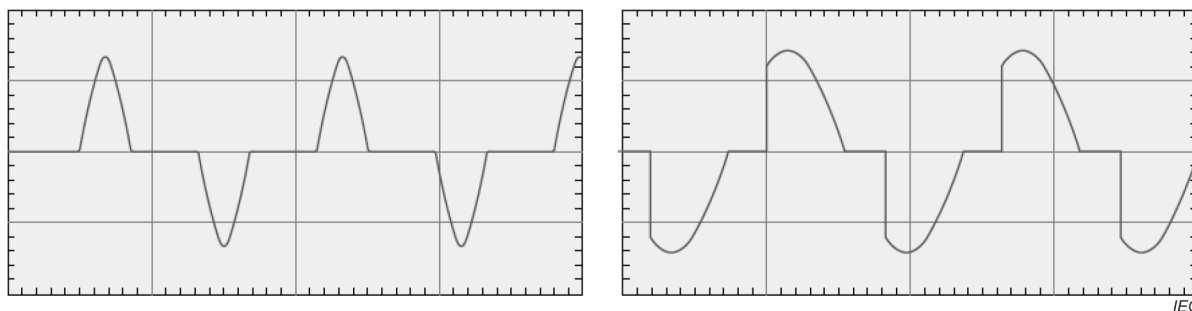


Figure 1 – Typical current waveforms for single-phase non-linear loads

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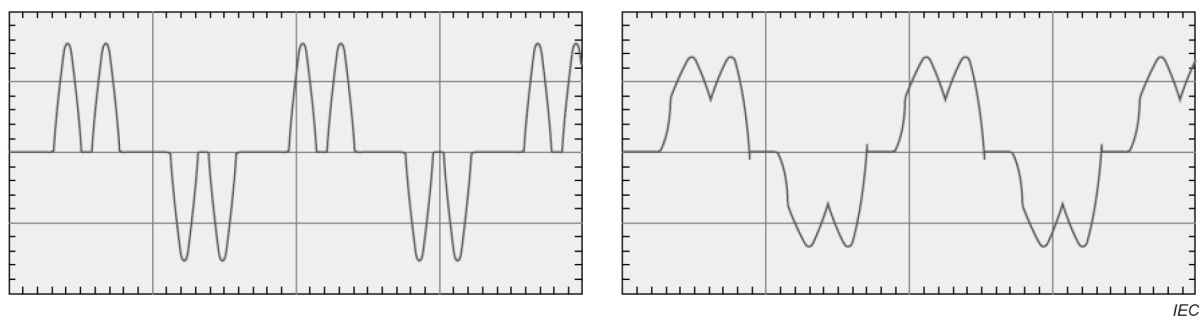


Figure 2 – Typical current waveforms for three-phase non-linear loads

A shunt-connected active correction device is used in parallel with the load to minimize these distortions, in order to obtain an approximately sinusoidal waveform.

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1 Scope

This document, which is a product standard, is intended to specify the EMC, performance and safety requirements of shunt-connected active correction devices (ACD) with rated system voltages not exceeding 1 000 V AC or 1 500 V DC.

These devices can be either cord or permanently connected. They can be movable, stationary, or fixed devices.

An ACD includes both a static VAR generator (SVG) and an active harmonic filter (AHF).

The primary function of a shunt connected ACD is to do one or more of the following:

- active harmonic filtering;
- reactive power compensation;
- unbalanced load compensation.

Additional functions of a shunt-connected ACD, not addressed by this document, can be the following:

- flicker compensation;
- interharmonic component filtering.

In case of hybrid devices, combining a passive harmonic filter and an ACD, this document covers only the active part.

This document does not cover

- active mitigation functions part of another device (variable speed drive, uninterruptible power supply, dynamic voltage restorer, etc.),
- switched power capacitors,
- switched inductors,
- passive harmonic filters,
- energy storage converters, and
- series-connected active correction devices.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60364-1, *Low-voltage electrical installations - Part 1: Fundamental principles, assessment of general characteristics, and definitions*

IEC 60529, *Degrees of protection provided by enclosures (IP Code)*

IEC 60664-1:2020, *Insulation coordination for equipment within low-voltage supply systems - Part 1: Principles, requirements and tests*

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